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ABSTRACT

This report describes the collaboration of a teacher educator at Michigan State University and two experienced elementary school teachers who spent 3 years team teaching an integrated curriculum that they developed for their third grade students. Four themes are most indicative of the teachers' experiences with the difficulties and rewards of learning to teach in innovative ways: courage, communication, trust, and time. These themes serve as focal points in a discussion and analysis of the personal and organizational resources that affect when and how teachers learn to teach. (MM)

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Elementary Subjects Center
Series No. 59

# DEEPLY ROOTED CHANGE: A TALE OF LEARNING TO TEACH ADVENTUROUSLY

Suzanne M. Wilson
with
Carol Mill and Carol Yerkes

Center for the Learning and Teaching of Elementary Subjects

Institute for Research on Teaching
College of Education
Michigan State University

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The work is designed to unfold in three phases, beginning with literature review and interview studies designed to elicit and synthesize the points of view of various stakeholders (representatives of the underlying academic disciplines, intellectual leaders and organizations concerned with curriculum and instruction in school subjects, classroom teachers, state- and district-level policymakers) concerning ideal curriculum, instruction, and evaluation practices in these five content areas at the elementary level. Phase II involves interview and observation methods designed to describe current practice, and in particular, best practice as observed in the classrooms of teachers believed to be outstanding. Phase II also involves analysis of curricula (both widely used curriculum series and distinctive curricula developed with special emphasis on conceptual understanding and higher order applications), as another approach to gathering information about current practices. In Phase III, models of ideal practice will be developed, based on what has been learned and synthesized from the first two phases, and will be tested through classroom intervention studies.

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Abstract

In this report, the authors describe their collaboration in a professional development school. Wilson, a university professor, and Miller and Yerkes, two experienced elementary school teachers, spent three years team teaching an integrated curriculum that they developed for their third-grade students. The authors identify four themes that best capture their experiences with what makes it both difficult and exciting to learn to teach in innovative, experimental ways. These four themes--courage and communication, trust and time--serve as the centerpiece for their description and analysis of the personal and organizational resources that affect when and how teachers learn to teach.

# DEEPLY ROOTED CHANGE:
# A TALE OF LEARNING TO TEACH ADVENTUROUSLY[1]

Suzanne M. Wilson, with Carol Miller and Carol Yerkes[2]

> Working with a college professor is exhilarating, exasperating, refreshing, frustrating, and rewarding. When we started working with Suzanne, we didn't know what we were getting into! It's always easy to sit back and explore new ideas by yourself because--as an individual teacher within the classroom setting--you are your own judge. But in a collaborative effort, there are strong feelings that you are being judged by others. To successfully build a team, we needed open communication, trust building, and time to be together. (Miller & Yerkes, memo, October 1991)[3]

Three years ago, we began collaborating on a project focused on "teaching for understanding." Naive about what it might mean to blend our minds and worlds, teaching persona and beliefs, experiences and values into an integrated curriculum co-taught by two elementary school teachers and one university professor, we pursued the idea based on an intuition that we *could* work together and a

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[1]This report will appear in D.K. Cohen, M.W. McLaughlin, & J.E. Talbert (Eds.), *Teaching for understanding: Challenges for policy and practice.* San Francisco: Jossey-Bass. The work described in this report has been supported by a number of sources including the National Center for Research on Teacher Learning and the Michigan Partnership for a New Education. In addition, Wilson's work has been supported by a fellowship from the National Academy of Education.

[2]Suzanne Wilson, associate professor of teacher education at Michigan State University, is a senior researcher with the Center for the Learning and Teaching of Elementary Subjects. Carol Miller and Carol Yerkes are elementary school teachers. The authors wish to thank Ruth Heaton and Deborah Lowenberg Ball for their counsel while writing this report--their conversation and questions have taught us much about learning to collaborate, write, and teach. We also wish to thank Laura Docter Thornburg and Steve Mattson for their company and conversation while we learn to teach.

[3]Throughout this report, we draw on written documents that we have collected during our work together. These include transcripts of interviews with observers, transcripts of weekly conferences, letters written to one another, a dialogue journal used sporadically, and memos written for other purposes about professional development school work. In some ways, it feels strange to quote ourselves, for as authors of this piece we could simply choose to rephrase or rewrite the words we have said or written earlier in our collaboration. But we have two reasons for drawing on such documents. First, what we describe in this report is learning and change, and we believe that showing readers the differences in our talk (and thought) over time (as reflected in notes we have written to one another) is one method of documenting some of that learning. Our second reason is related to the issue of voice. This report was primarily--in an official sense--written by Wilson. She took the lead in writing it, and its final tone and texture very much bears the stamp of her authorship. But it is a story told by all three of us, and we struggles with ways to allow both our shared and individual voices to emerge. By using the notes and memos and words of individuals, we hope to provide the reader some sense of how our minds and voices differ, as well as agree.

commitment to finding better ways to help students learn. We embarked on a collective adventure with our students, one full of uncertainty and doubt, blind alleys, dead ends, and a few triumphs.

Cohen describes a Romantic, Deweyian image of teaching which he calls "adventurous teaching."[4] It's a teaching that requires that teachers depend on students, that views knowledge as human and constructed. It's a teaching that portrays teachers and students inquiring together about problems that matter to all, a teaching that asks teachers to become "a species of mental mountaineer, finding paths between innocent curiosity and the great store of human knowledge, and leading children in the great adventures from one to another."[5]

Concerns for this kind of teaching echo throughout current reforms: "teaching for understanding" and "higher order thinking," "teaching for the 21st century," and "new education" are some of the most prominent and popular signals of such commitments.[6] While many assume that schooling must change, policymakers, reformers, and scholars alike are beginning to understand the deeply rooted difficulties that have constrained large-scale good teaching in the past: Consider the recent concern for systemic reform, for restructuring schools, for fundamentally altering assessment, for creating innovative curricula.[7] All of these reforms call for radical, sweeping change in teaching practices and in assumptions about schooling and learning.

We stand behind those ideals, for we believe, as Cohen states, that

> school instruction can be exciting, and must be if children are to learn; that instruction should also be intellectually challenging; that to be either exciting or challenging it must be attuned to children's ways of thinking, to their experience, and to their efforts to make sense of experience; and that some of the greatest intellectual adventures are to be found in the structure and content of academic knowledge. [8]

We recognize how difficult it is to teach large groups of children--who more often than not come from backgrounds varied and little known to us--equally well. We believe that schools and teaching

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[4]Cohen, 1989.

[5]Cohen, 1989, p. 4.

[6]See, for example, reports by the Carnegie Forum on Education and the Economy (1986), the Holmes Group (1990), and the National Council of Teachers of Mathematics (1989).

[7]See, for example, discussions of systemic reform by Smith and O'Day (1991) and discussions of school restructuring by Elmore and Associates (1990).

[8]Cohen, 1989, p. 7.

have to change, and we are committed to being part of that change. We see the changes that are necessary as mammoth and ones that demand creative thinking and action. But no matter the integrity or strength of our commitment, adventurous teaching is little understood. There exist no easy answers, no recipes for action that guarantee results. As scholars and teachers, then, we find ourselves exploring the nature, the texture, the features, the content of adventurous teaching. We want to know what it looks and feels like, what it takes to enact and sustain it, what it means for us as teachers and learners, as parents and administrators.

We have found in the first three years of our explorations that learning to teach adventurously is itself an adventure. We use that word with care, for adventures feel risky, but can be exhilarating. They require taking chances, but you can be more or less prepared for them. They often involve teams of people who play different roles. Sometimes there is a predominant leader; at others, leadership is shared. Inevitably on adventures, individuals possess a range of technical expertise and experience and often delegate duties accordingly. Moreover, adventures also often involve vague--or unknown--destinations. They evoke for us mental images of rough trails, peaks and valleys, raging rivers, unfriendly natives, unanticipated wonders. In our work learning to teach in new ways, we've felt ourselves on such an arduous journey--but one full of excitement, intrigue, reward.

Cohen suggests that the array of reasons typically invoked to explain the failure of school reform--school organization, the conditions of teaching, incentives for changes, flaws in the reforms--go only so far in explaining why classrooms have not changed much in the last 150 years.[9] We agree. We work in a professional development school, an environment in which there are financial and personal incentives; a great deal of intellectual and organizational support; facilitative and supportive conditions. Yet with all of these supports and resources, the process of changing our practice has been difficult and slow. It is our collective experience that changing one's teaching practice--no matter the

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[9]For a review of trends in educational policy, see Cohen (1989), Cohen and Barnes (in press), Cuban (1990).

conditions--is difficult work.[10] In this report--a story of one collaboration aimed at learning to teach adventurously--we focus less on what adventurous teaching looks like and more on the factors that have facilitated our inquiry. We do this in hopes of further exploring what it takes to learn to teach adventurously and the kinds of personal and organizational resources are drawn upon in such work.[11] We begin with a brief explanation of how it is that we came to work together. We then explore the critical factors that have supported our collaboration, as well as some of the unanticipated consequences of our work together.

*The Context*

Wilson is a teacher educator at Michigan State University who does research on teaching. Miller and Yerkes are elementary school teachers with 40-odd years of experience between them.[12] Several years ago, in an effort to combine her research interests in the subject matter knowledge required to teach elementary school social studies and her practice as a teacher educator, Wilson

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[10]In writing this report, we have talked a lot about the language we use to describe our learning. Note here we talk about "changing our practice" and at other points we talk about "learning to teach." We do not believe that change and learning are interchangeable, for there are times when we have learned something and it has not resulted in any change in our practice. And there have been times when we have changed our practice but little learning has resulted. However, in the mess that is the work of teaching, we find ourselves sometimes changing, sometimes learning, and seldom sure which came first, and how they are related. For that reason, we use "change" and "learn" interchangeably in this report, more because we have experienced them as a dialectic, not because we view them as isomorphic.

[11]For descriptions of adventurous teaching, see Ball and Rundquist (in press) and Heaton and Lampert (in press), as well other work by Ball and Lampert.

[12]As we noted previously, we have struggled in this report with the question of voice--and how to represent ourselves as a collective and as individuals. There are many things that we can state in chorus, for we have an identity, a history, a language, and some understanding that we have acquired together. But we also remain three distinctly different learners, teachers, thinkers. For the purposes of this report, we use "we" for the collective, but when we need to make points about individuals, we refer to each other with our last names. We chose to use last names for two reasons. First, Yerkes and Miller have the same first name and we felt that readers unfamiliar with us would find it difficult to keep track of Carol Y and Carol M. Second, Wilson is a researcher whose work is cited by others and it is always her last name that is used in such references. Because we see ourselves as peers and because we wanted to represent the voices of teachers with equal stature, we chose to use everyone's surnames. This seems awkward and distancing to us, for we are now close friends and like to present ourselves informally and personably but it seems the most reasonable solution. In our work, the distance between the individual and the group is neither as formal nor as distinct as it might appear in this report.

decided that it would be prudent to teach part time in a local elementary school.[13] She approached Yerkes, who worked at a local elementary school, a fledgling professional development school supported by the Michigan Partnership for a New Education, and asked if she could teach social studies every afternoon to Yerkes' class. We should note that Yerkes did not initially see this project as one that focused on her learning. Although Yerkes had a history of participating in research projects in collaboration with Michigan State University, her participation in this project was largely an opportunity to have someone else work with her students. She welcomed this opportunity as much for the relief it would provide from a busy day as anything else. What she might learn from Wilson's teaching, or how it might change her practice, was incidental.

Miller and Yerkes have shared their teaching responsibilities for several years prior to Wilson's arrival on the scene. Miller took responsibility for teaching science and penmanship while Yerkes taught social studies, language arts, and creative writing. They switched classrooms each afternoon, working with each other's students in those subject areas. In the mornings, they taught reading and mathematics to their own students. This "departmentalization" allowed them each to focus their pedagogical thinking on a smaller set of subjects, with each developing more expertise in selected areas. During the first year that Wilson taught, then, Miller was also a presence in Yerkes' room. Rolling in with her overhead each day, Miller taught science to the students immediately after Wilson. Although they never spoke much, Wilson affectionately referred to Miller as her "mop-up person."

After the first year of Wilson and Yerkes coexisting in one classroom, Miller joined the team and together we decided to explore what it would mean to integrate social studies, science, and language arts instruction. We created a new curriculum and shared teaching responsibilities--each teaching one third of the afternoon--45 minutes to an hour--four days a week in each of the two third-grade classrooms that Miller and Yerkes are responsible for. Miller continued to be primarily

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[13]Wilson's decision to do so also was influenced by a commitment of Michigan State University to support faculty who want to explore such roles, and she is among a small clan of such teacher educators that includes her colleagues Deborah Loewenberg Ball, Daniel Chazan, Ruth Heaton, Magdalene Lampert, and Janine Remillard. See Ball (in press), Lampert (1991) and Wilson (in press) for discussions and examples of such work.

responsible for science instruction, while Yerkes and Wilson taught an amalgam of language arts and social studies. We each emphasized writing and oral expression, reading and interpreting texts. And we chose themes around which to focus all of the instruction. For example, when we taught a unit on Detroit, Wilson used it as an opportunity to teach geography and map-reading skills; Yerkes taught about the history of native Americans in Michigan, and Miller taught about salt and salt mining. We planned and reflected together each week during release time provided by restructuring efforts through the professional development school work. Miller and Yerkes taught all other subjects to their respective third grades--which they did in the mornings--while Wilson stayed at the university and worked on her research projects and taught undergraduate and doctoral classes.[14]

Miller and Yerkes did not enter this project thinking of it as an instance of "teacher learning." Miller's reflections explain the transformation that she experienced:

> This adventure in my teaching helped me to expand as a teacher. Confinement that I experienced within my four walls of teaching never confined my growth as a teacher, because I've never been a traditional teacher. I've always tried to vary my teaching.
>
> When ITIP [Instructional Theory Into Practice] was offered to teachers within the district, I took the class, embracing Madeline Hunter's approach to teaching children. Within that approach, there was "wait time" after asking a question. I had sticks to call on students randomly. I had closure. I had review planned weeks after a unit ended. I had lots of turning to a neighbor to review or discuss a concept. I filled my teaching with all I learned to help students.
>
> As I look at that paragraph I just wrote, there are lots of "Is." This is where I had confinement. I had no one to communicate with about what was happening in my classroom. Yes, I could tell another teacher about certain aspects of my teaching, but it was never a serious discussion. It was superficial and usually consisted of passing comments. When I became involved in the professional development school efforts, I went through that process much like I went into ITIP. It was just part of my desire to see what someone else has to offer about student learning. Now 3 years later, I'm beginning to see a bigger idea. This process that I've been involved with over the past three years is not only about student learning--but about teacher learning. Not teachers being informed and told to try a certain idea, but teachers developing many exciting and stimulating avenues for learning. What's exciting about this is that teachers are not alone in the solitude of their classrooms, but teams work together. (Memo, February 1992)

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[14]Miller and Yerkes are also involved in other professional development school projects that involve university personnel, and those individuals often join the ranks of teachers in our two rooms. Most notably, they work with Janine Remillard, a mathematics teacher and teacher educator, on a project focused on learning to teach mathematics for understanding. We cannot begin to disentangle where we have learned the lessons we talk about in this report and we know that many of them have benefited from and depended on our work with Remillard.

Yerkes and Miller were not alone in their naiveté about this project. Although Wilson has originally conceived of her work in Yerkes' room as a project about her own "learning to teach," she never considered what Yerkes and Miller might learn from her. In part, this was largely due to her own feelings of ignorance and incompetence. After all, she had never taught elementary school before entering the school.

Although we all agree this work as been exciting, learning to work together has not been easy. We live different lives: We read different kinds of books, eat different kinds of food. Wilson travels extensively as researcher and consultant, Miller and Yerkes have families that demand attention and care. Wilson has been trained as a researcher and writes extensively about her experiences teaching and watching other teachers. Miller and Yerkes have been working in classrooms for years, accumulating experience and wisdom, quietly, unobtrusively. We have different masters to serve, for Miller and Yerkes must think about their colleagues in the school--teachers and administrators alike--as well as their union. Wilson, however, thinks about her colleagues at the university--teacher educators and researchers--who have expectations of her that differ from those felt by Miller and Yerkes. Our schedules differ: Wilson rushes back to the university for search committee meetings, Miller and Yerkes stay after school to talk with parents. Wilson has some control over how she organizes her worktime while Miller and Yerkes must always be in their classrooms. Our backgrounds differ: Wilson has lived on the east and west coasts and visits friends and family there often. Her dress and manner is decidedly different than that of either Miller or Yerkes, who have spent much of their lives in the midwest.

Some of these differences might seem trivial. But each of them, and more often some combination, have colored our adventures in learning to teach, for such learning is at once professional and deeply personal. It requires creating new relationships among school and university faculty, drawing on new resources, trying out new roles and responsibilities. It requires breaking old habits--some of them connected to personal dispositions--examining one's practice critically and honestly, unlearning traditional practices and relearning ways to think about teaching and school. Because it is at once personal and professional, it is difficult--probably impossible--to separate the idiosyncratic

from the generalizable. On the one hand, our success at collaborating has depended on the people who we are: Miller's serenity, Yerkes' pragmatism, Wilson's zest. On the other hand, there are features of our work together that transcend our personalities. It is to those that we now turn.

*Factors That Support Adventures in Learning to Teach*

As we think back on our work together, four factors seem critical to us: time and trust, courage and communication. Each seems simple in some ways–and obvious–but our experience has taught us how complex and multidimensional these factors can be: Just as we begin to think that we understand what it takes to communicate, we encounter some new challenge that enriches our understanding of the concept. Just when we begin feeling comfortable in our trust of one another, we encounter something that makes us ever more sensitive to the fragility of our collaboration. Just as our understanding of adventurous teaching continues to evolve, so does our understanding of the ways in which these resources nurture and sustain our adventures in learning. We explain in this next section how our understanding of these four themes has evolved and the impact they have had on our understanding of adventurous learning and, consequently, adventurous teaching.

We structure our discussion of these four themes around a pattern that we have noticed in our learning. If you had asked us before we started working together what factors would make a difference in the success of such a project, we would have more than likely been able to tell you that these four mattered. We knew before we started that time and trust would be crucial. But what we have found over the course of working as a collective is that our understanding of each theme started out as rather simplistic. Over time, that understanding grew deeper, more complex. And somewhere along the line, we began to notice that what we were learning about our own learning had direct implications for the learning of our students. That is, we began to understand the relationship between the resources *we* needed to learn and the resources that our *students* might need. And so we present our discussion of each of our four themes in three parts. We begin by explaining our simplistic notions. We then explain how these notions were altered and enriched over time. We conclude each section by exploring the connections we see between teachers learning in adventurous ways and students learning in adventurous ways.

*Time*

Interviewer: What does it take to collaborate successfully?
Miller: It takes time, dedication. Things don't happen overnight. (Miller, interview, March 1991)

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Definitely you have to have time. I don't care what anybody says. If we didn't have this professional development school time, your day is so structured in a regular classroom, by the time you teach something, correct papers, plan your next lesson, if you have any time, you have a family to think about. You just don't have time available to you to think of new ideas, to reflect. So time is number one. (Yerkes, interview, March 1991)

Among all the resources necessary for such work, it is perhaps time that is most essential. Time has affected our work in myriad ways. The time we've had to watch one another teach has meant that we see alternative images of teaching and learning. The time that we've had to meet has facilitated collective reflections on our teaching and learning. The time that we've had to write has meant that we've begun to leave a paper trail of our experiences together and have had the chance to think abstractly about the particulars of our experiences. In short, without such time, there would be no physical--and more important--intellectual space to think about and learn from our experiences.

*Time to breathe.* For years, Miller and Yerkes had had no time to breathe during their typical work day. In a semi-serious, semi-joking tone, Yerkes told Wilson that the biggest delight of having her teach every afternoon was that there was time to go to the bathroom, to get a glass of water, to make a phone call. These little luxuries were unknown to her, and no small reward for the decision to collaborate with a university person. Miller explained a similar reaction in a letter: "As I look at my teaching, it has never been stagnant. But it was always stifled by time constraints I had as a teacher. So opportunities to share teaching responsibilities were like a blessing." (June 1991)

It is difficult to sustain one's attention to students' thinking and talk when there is little private space in the day. By adding a third teacher to two classrooms, we were able to provide each person with free time. We each used this time in different ways: writing notes about class, watching someone else teach, grading papers, phoning parents, meeting with other colleagues or visitors to the school. Having these breaks became important, for they provided some emotional and intellectual space in the day, time that enabled us to sustain our attention to the teaching that we *did* do, without feeling suffocated by the daily routine.



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*Time as part of adventurous learning.* But our reaction to the physical aspects of time was only a very superficial cut on how free time affected our teaching. Although it did provide some rejuvenation during the day, the time began to take on new meanings as we became more and more engaged in watching each other teach--and talking about that teaching. Most notably, time became for us a source of insight into how we might teach in new ways. Unlike typical inservices in which "experts" (often university personnel) visit schools and tell teachers what to do, Wilson's daily practice as a teacher has afforded Miller and Yerkes a different kind of professional development. Yerkes once explained in an interview:

> I think you need the support of people with new ideas. The only way we change our teaching is to talk to people who are also changing. And you need time to talk to one another. But not on just a one time basis, for it's got to be reoccurring. If Suzanne had come into my room and done a couple of lessons and said, "Okay, this is the way you teach," I would not have changed. But because this has been on-going for several years, I really am seeing changes in myself--in the way I think. It is because of that support of talking with her and with Carol Miller. (March 1991)

She contrasts this with the typical inservice experience:

> Workshops can make all the difference in the world, but 99% of workshops--at least in my experience--are a waste. It's a one-shot deal. Someone comes in, you hear something, you go back, you're excited, but there's no follow through. So then it's easier--it *is*--to go back to what you already know. You feel comfortable with that, you know how it works, and for how long. So that comfort is for *not changing*. With Suzanne here all of the time, now I feel like I can't go back. The things I've learned have changed my thinking about teaching entirely. (March 1991)

By having the chance to watch other teachers, we have each seen teaching--and our students--from different perspectives. Our reflexive conversations and observations have encouraged us to continue experimenting with our own teaching. No one person has determined that "this is the way it should be done." Each of us have extracted from the others' practices something to experiment with, to explore, to model. In a letter she once wrote to Wilson, Miller explained in a letter the effect that such watching had had on her teaching of "systems":

> I love watching the interaction that goes on in the classroom while you are there. It lets me have a different perspective of my role in the classroom, the role of the children in the classroom, and I am more thoughtful of *all* the material I teach.
>
> For instance, the science I'm teaching is so different this year. With this unit on Africa, I have decided to introduce the children to just one concept, "system." We brainstormed about what a system was and listed them on the board. They said that a system had things in it, people in it, that the things and people worked together, and that there

> was a solar system. After this, we looked up the definition in the dictionary to see if our ideas were the same. We found we were right and added other ideas about what a system could be--for instance, that it could be a set of ideas working together, like the rules in our school or the laws in our city. The next day I gave them a booklet with a list of definitions that we compiled the day before on the first page. The rest of the pages were blank. We reviewed the definitions and then broke up into groups of two and listed as many systems as we could. After 10 minutes, we talked about all the different systems there were. . . . We had a good discussion about why these were systems. The next series of lessons was the most exciting I've had this year.
>
> Let me preface this with the fact that in the years past, I would give students a battery, wire, and a bulb and show them how to make the light work. I would then have a discussion about why this is a system and that this is a light system.
>
> This year, I gave them the light bulb, a wire, and a battery and asked "What are these things? What can we do with them?" I heard comments like, "We're going to make a system." Then they broke into groups of two and discovered how to make the bulb light. In one room, they discovered two different ways. I was so excited! They were teaching me some new ideas! We came back together and shared what they discovered. Then I let them go back to their groups and try these discoveries. Two girls discovered a third way to make the bulb light! . . . The excitement level was very high and they were ALL on task looking for new ways to make the light work. And they did! I was so excited about how smart they were and how much growth can take place in the right atmosphere! (May 1991)

In a postscript to this letter, Yerkes added her observations about what was happening with the students:

> The children are looking at answers and not just letting others decide what is right and wrong, but thinking through more for themselves. They challenge answers, are better able to defend their own answers, and seem more willing to listen to several points of view to make up their minds. This holds true not just in social studies and science, but in other areas as well. Students also seem to be making more connections between different subject areas. I'm sure glad you've helped us grow and change in our teaching methods, Suzanne. (May 1991)

It was during a conversation that ensued from this exchange of letters that we began to realize how much our own collaboration was a site for us to learn about learning. As we examined ourselves in light of these changes, we wondered at the factors that made it possible for us to experiment, to watch each other and find ways to adapt our own teaching given these new experiences. Watching each other over time and seeing how children's skills and knowledge developed over a sequence of classes--rather than a single experience--was an exciting and rich site for our own learning. It made us want to find ways to give students the same kind of time to stew in ideas, to consider alternative explanations, to generate and then challenge hypotheses, to explore territories that mattered to them in ways that were genuine.

*Time as part of adventurous teaching:*

> You don't teach as much. You really don't. You don't get nearly as much material covered. And that is somewhat frustrating because we have always been told, "You have to cover this, and this, and this." (Yerkes, interview, March 1991)

A third way that time has factored into our work has been our willingness to slow down the curricular clock. Covering the curriculum has been a major theme in our discussions. It has not been unusual for Yerkes to ask Wilson:

> One question. You're spending 45 minutes on one topic. I was thinking, when we're working with the regular classroom, we can't spend that much time on one topic for that long, according to our minutes and all that--we have a bunch of stuff to cover. You don't. (May 1991)

As classroom teachers accountable to district standardized tests and mandated curricula, Yerkes and Miller have both had to struggle with making decisions about what to teach and how much time to commit to ideas. Teaching for understanding--no matter the shape or form it takes--means that students and teachers together need more time: time to make mistakes, time to go off on tangents, time to let ideas bubble. As committed teachers who feel responsible to their administrator, parents, other teachers, and parents, it has been difficult for Miller and Yerkes to make decisions about what to take time for and when to move on. Wilson, because she is only responsible for teaching the piece of the integrated curriculum we planned together, felt less of this pressure. In some ways, feeling less pressure enabled her to ask questions about the curricular clock: Why *did* we have to race through ideas? What happened if we did so? What happened if we didn't? Could we be sure that students were learning less because we were covering "less"?

It was hard for Yerkes and Miller to respond to such questions. They had assumed for much of their teaching careers that coverage was important. Yet, when Wilson asked whether they were sure that children were "learning" less, they had little evidence to support the claim. Coverage--and our individual assumptions about it--became a major question in our conversations: What are we giving up if we only teach one math problem every day--and have rich and varied conversations with students around it? What price do students pay if we spend six weeks studying "scale" instead of the allotted three days? What responsibilities do we have to other teachers in the school, and to the children whom we teach, to make sure that they explore--and are exposed--to a host of ideas that matter? How

do we select which ideas are the important ones? We are far from answering any of these questions, but we find them guiding our current explorations.

And our experiences with what happens if you do slow down have convinced us that it is worth taking the chance. Consider Miller's experiences with teaching about insects. In the past, Miller had taught students about insects by presenting them with information about their life cycle, habitats, size. But this past year, she taught the unit in the spirit of an exploration, an adventure that she was taking along with her students:

> We were coming up with a definition of what an insect looks like. I asked the question, "How many legs does an insect have?" Juan's hand went up: "It has 8 or 10 or 15 legs."
>
> In the past, I would have said, "No, an insect has 6 legs!" And I would have assumed that Juan would correct his understanding in light of my presentation of this "fact."
>
> But instead I wanted to get a feeling for what he was thinking, so I asked, "Can you give me an example?" Juan replied, "A caterpillar has many legs and it's an insect." This opened up a class discussion that showed me that Juan wasn't the only student with this belief. Others agreed with him, yet there were others who didn't. Through much discussion, the class came to the conclusion that we need to say that an *adult* insect usually has 6 legs. [We had a monarch butterfly emerge from a cocoon in the classroom with only 4 legs--so we added the adverb, "usually."]
>
> These conversations are rich and valuable. They build up student self esteem, and a classroom atmosphere of trust and questioning. They allow students to express their ideas, and I have alternate ways of assessing what they know. It takes time to teach in this trust-building atmosphere. Many times we scrap my lesson plans to accommodate a genuine student-initiated discussion of a piece of subject matter. But if they truly understand one segment, doesn't this build on future understandings? (Memo, February 1992)

Taking one whole class period to discuss the number of legs an insect means that Miller could not also discuss other things she used to tell students about insects in the same time allotment. So time, for us, becomes a central question and an essential ingredient in developing a real growth in understanding. Children need time to brainstorm, tinker, try new things, discover new relationships, and even to take apart understandings that don't work and rebuild them from their foundations. They need time to be wrong and to learn from their mistakes. They need time to watch actual consequences of poor decisions. Too often, we as teachers see them headed for failure and we try to intervene and prevent them from

the heartbreak of failure. Yet, as collaborators, we have come to realize how important it is sometimes to fail and, subsequently, we have begun to question the wisdom of protecting students.[15]

Stated most simply, we give students the chance to do the kinds of things we have done in our collaboration. This has meant giving them some curricular control so that they can "own" the ideawork of the class, just as we have felt such ownership in the development of our own curricula. It has meant letting them identify different problems and try out different solutions, just as we have tried out new ways to teach. Integral to our experimentation and to the explorations we want children to engage in is the understanding that there will be failure--and that there is a lot that can be learned from failure. It has meant that different solutions--equally sufficient--can exist in the same classroom, just as it has meant for us developing three different ways to teach, each true to our developing principles of adventurous teaching and true to our individual personalities, preferences, idiosyncrasies. Teaching in this way--a teaching that leaves lots of room for individual and collective exploration, room for mistakes and deadends, room for multiple and competing solutions--takes time. We see that in our own learning, we believe it to be true about learning that matters for our students.

*Trust*

It's hard to learn to collaborate. It takes trust (Yerkes, interview, March, 1991).

Trust has been another central theme throughout our work. It is scary to invent a new practice, and we have had to find ways to treat our individual vulnerabilities with respect and care. Wilson had to trust that Miller and Yerkes would be open to her experimentation with different forms of teaching--and not intentionally do anything to sabotage her efforts. Miller and Yerkes felt an overall

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[15]We use words like "mistakes," "wrong," and "failure" with great care. We wonder a great deal about what constitutes failure in our classrooms--in the case of teacher or student--as well as what it means to be "wrong." Often, for example, what at first blush appears to be a mistake to us, turns into a great idea. Moreover, when something feels "wrong" to us, it does not necessarily feel wrong to our students. But sometimes it does. And in our work watching students struggle with ideas, we notice two faces of failure or error: the cognitive and the emotional. Although we can rationally and openly aver, "It is okay to do something that doesn't work out," that rationalization does not make us any less human. We feel badly when we don't do something well sometimes out of frustration, sometimes out of anguish. Likewise, our students feel anger, frustration, embarrassment. To say that "anything goes" does not save us from deeply felt emotional reactions to not "getting it right." Because of its two faces, we choose to use the words "failure" and "wrong" in this text, not because we think constantly of failure and error in our work and the work of our students but because we want to remind readers of the emotional aspects of learning.

responsibility for their students' well-being and they had to trust that Wilson would take good care of their students' hearts and minds.

What does it take to develop such trust? Time to talk and watch, to develop personal and professional ties with people, to understand their values and motivations, their ways of working and seeing and understanding the world. It takes some sort of compatibility, as Yerkes once remarked: "Suzanne and I have personalities that mesh really well. I think that everybody needs someone like that to bounce ideas off of."

*Trust grounded in professional respect.* In our case, we began with a trust grounded primarily in professional respect. As Miller once explained:

> Carol Yerkes and I have two different teaching styles--completely and totally different. I respect other teaching styles and that's what's nice, because Carol respects mine, too. And I think Suzanne respects us as teachers, too. (Interview, March 1991)

One part intuition, one part professional respect (as university professor with a PhD, as experienced teachers with lots of clocktime in classrooms), we began our work by trusting one another's credentials. In addition, Yerkes was impressed with Wilson's decision to be a teacher educator who worked in schools:

> I'm sorry, but I've always felt the teachers who taught us to teach hadn't been in the classroom for so long. And especially today, it's even more true that children are extremely different. If she's going to teach teachers, she should know something about schools. (Interview, March 1991)

Over time, however, we developed a trust much deeper and much more significant to our ability to learn together. This more complex trust is not a hands-off, you're-a-professional, I'm-a-professional trust. Instead, it's a trust grounded in mutual respect and commitment--to learning, to children, to change.

*Trust as part of adventurous learning.* In a memo they wrote about Wilson, Miller and Yerkes explain:

> What we saw in Suzanne was a college professor willing to take risks, willing to leave her comfortable world at Michigan State University and venture into an unknown atmosphere, trying to see if what she was teaching in her world was related to ours. It was easy for her to tell other teachers how to teach, but did this really fly in the classroom? We saw her not as a researcher, but as a gutsy traveler willing to experience the real classrooms. (October, 1991)

Miller elaborated on this in an interview:

> Suzanne will do anything and try anything and is not afraid to fall flat on her face. It helps us to know that we can do the same thing. If she can do it, we can do it, too. I think of her as an example. And I think of her dedication to kids, to learning, to finding new ways. Not sticking to the tried-and-true. Always asking, "Are kids learning? Are they really understanding?" (March 1991)[16]

On other occasions, we have talked about the dialectic of our teaching and learning. Yerkes once called us three "teacher-learners." She explains:

> With both of us being teacher and both of us being learner at different times. There have been a lot of things that I have learned from Suzanne. I've really changed some things about my teaching and tried some really different things because of her example. And because of her encouragement. . . . So I think that in that case, I am the learner. And then there are other times when she has had an idea and I have gone along and developed it differently. I think that some of the things that *I* have done, *I* have developed, she has incorporated into her teaching, too. (Interview, March 1990)

This trust--knowing that the other is asking hard questions, risking failure, taking chances--has made us much more open to one another's ideas, for we understand them to be fragile and tentative. It has also made us more willing to respond in kind. Such trust, a trust that grows as you come to know one another as learners, is not always easy. For us, it has taken patience, for it is not always easy to tolerate our differences. Yerkes recalled what it felt like to watch Wilson at first:

> It seemed like total chaos. . . . When Suzanne first came in, it took me a while. It was very difficult to just shut my mouth and sit there and listen and see what she was trying to accomplish because to me it seemed really chaotic. It's very difficult not to be judgmental. I think that's one of the hardest things. I know there have been many times when I've had to bite my tongue. To go out of the room, to get away and come back and listen and watch what happens next. (Yerkes, interview, March 1990)

It was only through watching Wilson's chaos over time--and talking with her about the work--that Yerkes began to see in Wilson's chaos things that mattered to her as a teacher. For example, Yerkes began to notice something about her students and their responses to Wilson's questions:

> Suzanne has shocked me because I have been surprised at what kids can know. I go, "Oh, my God! They think a lot more than I ever thought!" The poetry, the things like that that I didn't think could be churned out by third graders three or four years ago. Now I'm looking at kids and I'm saying, "Oh my God! They can think a lot more that I ever dreamed they could!"

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[16]Actually, Wilson *is* afraid of falling flat on her face, and doesn't like it when she does, for several reasons. One part frustration, one part embarrassment, she would prefer to "get it right." But primarily such travails worry her as she thinks about what students are learning during these adventures.

And she reflects about how this has changed her teaching:

> I'm learning to question. I still don't feel that's a strong area for me but I see it improving, and not just in the social studies and science. I'm finding it carrying over into reading and math and some other things. I'm finding that I'm doing more of letting kids come up with ideas and questioning them in hopefully good ways and making them start to think. A lot less giving answers, which--of course--is the traditional role for teachers. We were the information giver and they would just soak it up. (Yerkes, interview, March 1991)

Wilson, on the other hand, had to learn to trust that Miller and Yerkes could see something good in her chaos. She initially called them the "mop-up ladies," because she left them with an instructional mess of riled and rambunctious students every day. Gradually, Wilson has had to learn to do less apologizing and more reflecting on what actually was good in the chaos and what was not, instead of focusing on the surface confusion. This took time and trust, for it is difficult to feel like you're creating a mess everyday for other people to share, and humor--"mopping up"--was much easier to engage in than serious discussion about the substance of the class.

Besides feeling vulnerable and impatient, judgmental and concerned, part of learning to trust has meant overcoming self-imposed insecurities. Each of us has had to develop her own sense of self-worth, understanding that our very differences can also be our strengths. Looking inward, we have had to make personal peace with these differences, even though the group has always celebrated them:

> I don't look at things like Suzanne does. I'm the more practical one. Suzanne does one kind of thinking and I do an entirely different kind. But now I realize that that's what *my* value is. It took me a long time to think of that. (Yerkes, conversation, June 1991)

Although we would all attest to a strong faith and trust in one another, we treat this trust with tenderness and care. Because we constantly find ourselves moving forward, learning new things, taking new chances, we also find ourselves having to trust one another more and more. For example, in writing this report, we have had to talk about some things that have previously gone unexplored, and we had to trust that our relationship could handle it. When we talked about the reasons why teaching for understanding is so difficult, for instance, our conversation turned to the issue of grading. Yerkes complained that "we have to give letter grades." Wilson asked what she would prefer to do. Miller suggested that we should provide assessments that are like the ones Wilson sends home to parents (a combination of a narrative about the child's work and an explanation about the curricular territory

being explored). "So why don't you do that?" Wilson asked of Yerkes. "What do you think *I* would do if I taught full time?" Wilson pushed harder. "There must be something in our contracts with the district," Yerkes guessed. "But what would happen if you sent home a description to parents instead and refused to reduce everything to an A, B, C or S?" "I don't know. I've never thought about it," Yerkes replied. We then brainstormed possible reasons: "It's easier to give an A," "parents expect traditional grades," "it's what we were trained to do"--all surfaced in the discussion.

Conversations like this one are not easy. One person challenges another's assumptions, and an honest exploration of the reasons for behavior inevitably surface some things we'd rather not say out loud. None of us enjoys confrontation, and no one especially likes looking at one's flaws. We would all like to be perfect teachers, perfect people. But we're just ordinary people and sometimes we make decisions because it is the easiest thing to do, or the least messy, or the most familiar. And in our talk with one another, we have to learn to acknowledge this and accept it. Learning to face up to the myriad reasons we act as we do really does help us learn to see ourselves and our teaching practice. We could not manage such discussions without a trust that runs deep and true. It's a trust we strengthen both by treating one another with respect and care *and* exploring what it might mean to push each other even farther than we ever thought possible, exploring assumptions we have always taken as "givens."[17]

This trust--a trust that allows individuality and community--is not the kind of trust you develop by saying that you trust someone or knowing that you *should* respect someone. The trust that really matters in our work is homegrown. It is rooted in shared trials in which we have dealt with our diversity and repeatedly demonstrated to one another that our respect for that diversity is deep and genuine. In our conversations we've also come to realize that this is the very trust we are committed to developing among our students. It's a trust that allows us to hold different values, to live different lives; it is a trust that might enable our students to embrace their own diversity and make the most of it in our collective learning. It's a trust that let's each of us try out half-baked, fragile ideas without

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[17]We should note here that the trust is both of one another and a trust in one's self. We explore this issue of trusting oneself in the section we devote to "courage."

fearing the frustration and deadends or the rethinking and regrouping that often accompanies creative and exploratory thinking. We want our students to feel such trust because it will enable them to show us--and their peers--their minds' work. Seeing this parallelism between the trust we have come to develop and the trust we want to engender in our classrooms has lead us to understand that there is a third way in which trust has factored into our collaboration--the trust grounded in our curriculum and instruction.

*Trust as part of adventurous teaching*. Trust has taken two distinct forms in our teaching: developing a trust between teacher and student and developing a similar trust among students. We begin with the former and move on to the latter.

For us, learning to trust students has translated into learning to depend on them as coadventurers. As Cohen explains, teachers who try to teach in adventurous ways increase their dependence on students:

> For if students are to become inquirers, if their knowledge is constructed rather than merely received, they must take a large responsibility in producing instruction. . . . Teachers must rely less on their own protected performances in lectures or recitation or on materials that they control, such as texts and worksheets. They must accept their charges much more fully as co-instructors. They must find was to help students expand their intellectual authority--which implies some reduction or transformation in their authority. Teachers must find ways to extend their own dependence on students, which implies relinquishing many central instruments of their authority. Teachers must make themselves more vulnerable, offering students opportunities to fail them, and even inflict painful wounds, in order to help them become more powerful thinkers. [18]

As we explore teaching in more adventurous ways, we find ourselves becoming more dependent on the students--and feeling less in control of the teaching and learning. Yerkes recalled the first time she tried something different, crafting a unit in which students did all of the substantive work in small groups:

> It was wonderful! It was frustrating! It felt like I didn't teach. I felt like I wasted time because the kids were in groups and doing their own thing. . . . I was feeling frustrated because I felt I wasn't teaching. And yet it was really neat to see what they were coming up with. It's very different because you're no longer "boss." It's probably one of the scariest things that can occur to a teacher. (Interview, March, 1991)

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[18]Cohen, 1989.

Becoming more dependent on students is a difficult experience. You have to trust that students will take you to important places. As Yerkes suggests, it's unfamiliar and feels strange. It's scary not to be captain of the ship, not to be able to control where the class travels next. It also places the teacher in role of constantly monitoring the class's progress: When should the teacher determine the direction a class should go? When should students? How long is long enough to spend on an idea? What happens when a teacher makes an instructional move that threatens the students' ownership of the work? These questions have run throughout our discussions. Consider Wilson's reflections in one afternoon conversation:

> I've been feeling really badly about spending so much time on latitude. I really want to be able to explore different kinds of maps with them. So I was trying to push the conversation along a little. I was trying to figure out how to be a little proactive in nudging them toward some closure. But I never feel like I'm doing the right thing--I'm either feeling too pushy or not pushy enough. So I took a chance and said, "This is how to find the latitude." Travis really pushed back. He said, "This is our discussion, Dr. Wilson. Can't you just be our reference?" (May 1991)

As heartening as it has been to see students engage in dialogue and debate and to take real interest in identifying and solving problems that matter to them, we're a long way from understanding the role of teacher as guide in such classrooms and how much control teachers need to take over the pace and content of the curriculum.[19]

Learning to create classrooms in which students are willing and able to engage in such discussions is no mean feat. During each year, it has taken us nearly six months to develop the norms in the classrooms that are necessary to have collective inquiry into ideas. Part of this is our own lack of knowledge and skill with such teaching. Part of the difficulty are the beliefs and assumptions that our students bring to third grade. Eight- and nine-year olds are already savvy students of schools and human nature, and it is not always easy to encourage them to collaborate in our adventures. Students have over and again explained to Wilson that she needs to act more like a teacher--meting out discipline in the face of students who act out. Some students, trying to be helpful, have insisted on

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[19]This problem is exacerbated--in some ways--in our case, for we are at once dependent on our students and dependent on one another. In developing an integrated curriculum, we've tried to find a way of exploring aspects of science, social studies, and language arts that complement one another. But if our students make a choice to focus on one idea in their discussions with Yerkes, and an entirely different idea in their work with Miller, that integration can begin to disintegrate.

donning the mantle of behavior police: taking note of who acted well, who acted poorly, and making a report to Yerkes or Miller. It has been difficult for Wilson to return to the classroom day after day and not fall into timeworn and familiar patterns of behavior, scolding children and using traditional means of discipline.

If we want to create classrooms in which everyone has a voice and contributes to our adventures, then we need to trust that students are capable of sharing leadership in our adventures: sometimes as guides, sometimes as leaders of subexpeditions, sometimes as advisors. We've found ourselves giving students power over how well the class goes in order that they might someday acquire the intellectual habits necessary to have power over ideas. And giving them this power means leaving lots of time for them to abuse it as we all learn how to use it. There is no easy process, no set of steps packaged in a tidy curriculum that helps us teach our students to be trustworthy coadventurers. We continue to seek new ways to help them to trust each other and themselves, and we continually make clear our commitment to their minds, and our continued respect for their ability to act responsibly and to think well.[20]

Developing trust among students has other dimensions as well. Students can be cruel and harsh, sometimes thoughtless critics of one another. Yet, if we want students to take chances, to guess, to hypothesize, to wonder out loud, they need to know that their wondering will be treated with respect by all. Consider Yerkes' description of the trust and courage that her new ways of teaching math entail:

> In previous years, I would present a new math problem, showing the "proper" way to solve it. Then I would model my thinking as I slowly let the class take over solving similar problems until I felt they "understood" the process. The children would then solve several problems independently while I checked their work to see if they were doing them "correctly." But one thing I *did* notice was any switch in the pattern and I would have to explain each new type.
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> Today I present a new problem and let the children individually or in small groups work on solving it. Children discuss their ideas with each other and try different strategies for solving the problem. Then children usually volunteer to present their

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[20]The question of how to help students learn to share such responsibility continues to plague us, and we differ in the ways we explore the possibilities. We do believe that there is no linear process, no step-by-step procedure that takes students from no responsibility to new levels of responsibility. If we *begin* our work with students, treating them with a lack of respect (by not allowing them voice, by making all of the decisions, by controlling when and what they do), then there is no reason for them to trust us when we later give them such respect.

> ideas and/or solutions to the whole class. We may have as many as ten different ways of solving the same problem. This process takes a lot of courage and trust. The child who is explaining must trust the others not to make fun of his/her solution even if it does not work. When children do not understand an explanation, it takes courage to ask for more information. Because more children take ownership for their own learning, they keep asking questions of each other until they feel comfortable with the solution. It also takes courage to revise your answer when others present convincing arguments. (Memo, February 1992)

Again, it has not been easy for us to give students the control over their own learning, to trust that they will learn to treat our ideawork, their peers, and themselves with the respect necessary to engage in such curricular expeditions. As Miller says, "I have to consciously work at it all the time." She reflected on the change this trust has provided in her teaching:

> When I ask a child a question, I used to do this in a way that I would expect a certain answer. Now I'm still asking questions but instead of expecting a certain response, I'm trying to listen to what students have to say, to try and get at their understanding. This can take simple shapes in my classroom.
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> For instance, we have been putting stars on a map when we received literature from different places in the United States. The map was attached to a cold window, and one morning we came in and the stars were gone. The class was a buzz, and all students were wondering where the stars had gone. In the past, I may have said why the stars fell off of the cold window. Instead, this year I asked, "Why do you think they're gone?" After many responses about different things that could have happened, as a class, the students figured out that the window was too cold for the stars to adhere to it. Then, instead of me finding a solution to this problem, the students spontaneously came up with several ways to solve the problem.
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> This event ended with me congratulating them for solving this problem together, that I hadn't even thought of some of their solutions. The satisfaction and nodding heads and smiles were outward signs of their gratification and a continuation of a trust building relationship.
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> This is not easy for me to learn to do. When I see a student wondering about a problem, I see them confused or maybe misunderstanding a concept. My sense of nurturing make me want to take them and lead them to understanding. This is still a strong influence within me, but I'm learning to channel it differently. Instead of telling them answers, I *try* to assume that their reasoning makes sense! By asking questions I can get a feel for how the child is making sense of something. It has become one of the biggest differences in my teaching. (Memo, February 1992)

Our understanding of trust, and its relationship to adventures in learning and teaching, continues to grow. It's not just a very human fear of how dangerous it is to trust someone that makes learning to trust ourselves, each other, and our students difficult. We feel some pressure about our professional responsibilities. After all, our students are children. They can't be held accountable for making curricular decisions. As adults, we need to make sure that they have opportunities to learn

things that matter. That requires making hard decisions and becoming comfortable with the uneasiness inherent in walking a tightrope between the accumulated wisdom of curriculum developers and our own knowledge of what and how and when our students might best learn things.

But trusting also requires that we leave room for failure, for frustration, for confusion. As teachers, we were taught to create classrooms that are comfortable and nurturing environments where students feel loved and supported. But as we turn to them as coexplorers, we have to rethink our assumptions about what they can do and how strong they are. We have come to understand the distinction that Hawkins makes between love and respect:

> Long before Bettelheim, Immanuel Kant had given profound support to the proposition that, in human affairs generally, "love is not enough." The more basic gift is not love but respect, respect for others as ends in themselves, as actual and potential artisans of their own learnings and doings, of their own lives; and as thus uniquely contributing, in turn, to the learnings and doings of others.
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> Respect for the young is not a passive, hands-off attitude. It invites our own offering of resources, it moves us toward the furtherance of their lives and thus even, at times, toward remonstrance or intervention. Respect resembles love in its implicit aim of furtherance, but love without respect can blind and bind. Love is private and unbidden, whereas respect is implicit in all moral relations with others.
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> To have respect for children is more than recognizing their potentialities in the abstract, it is also to seek out and value their accomplishments--however small these may appear by normal standards of adults. But if we follow that track of thinking one thing stands out. We must provide for children those kinds of environments which elicit their interests and talents and which deepen their engagement in practice and thought.[21]

Our work thus far has taught us a great deal about what children are capable of, and our respect for them--as thinkers and collaborators--deepens daily. It is out of that respect that we continue to wrestle with what kinds of environments we can develop that will best suit their needs and enable them to continue to develop their individual talents and abilities.

*Courage*

As we have explored the role that trust has played in our work, we have found it difficult to not also speak of courage. Although we have worked hard to create safe and trust-worthy environments for ourselves and for our students, the safety of the context goes only so far in promoting

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[21]Hawkins, 1978, p. 48.

the kind of risk-taking adventurous teaching entails. And so we have learned too the importance of courage.[22] It takes courage and energy to take the chances this work has entailed. This is difficult enough to do alone in a closed-door classroom, but in a collaboration one must do it in front of others--knowing that they are watching you sometimes flounder, wondering how they are thinking about that, trusting that they will treat you gently in the aftermath.

Courage plays a role in such work in several ways. First, it takes courage to take chances, to try new things, to veer from the familiar, to examine one's practice. Looking in the mirror at one's teaching can be difficult, for it calls into question choices one makes daily--as well as choices one has made in the past. In one conversation that we had about experimenting with alternative versions of mathematics teaching, Carol Yerkes talked about how long ago she had made the decision to teach children the "basics" in mathematics--how to balance a checkbook, how to add, subtract. She had thought about using manipulatives but had made the decision that she did not have the time or the inclination to teach children about the deeper understandings of mathematics. As a teacher, one makes such decisions all the time: what to focus on, what to give less attention to. In the course of our collaboration, though, she was beginning to rethink what she had taught--or not taught--her students for the past 20 years. And she found this thinking very painful, for it made her wonder about what students *hadn't* learned in her classes before this.[23] Before working with other teachers so closely, she had always considered herself an innovative teacher--but watching someone else has really had her rethink those assumptions. She explains:

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[22]As we mentioned previously, another way to think about courage is as a resource that becomes available when one learns to trust oneself. This overlap in trust and courage points to the ways in which our themes are interrelated. For the purposes of this analysis, it seemed right to examine each separately.

[23]In a collaboration, we have found that a byproduct of calling into question one's own assumptions is sometimes an implicit calling into question of one's colleagues' assumptions. Miller's willingness, for instance, to question the ways in which she teaches writing might give Wilson pause to wonder the same things about *her* teaching of writing. Alternatively, Yerkes' decision to ask questions about her management system might make Miller wonder whether she should do the same. What we learn from one another's example can sometimes be exciting and at other times annoying: There are just so many changes one can try to make at once and just so many questions one can juggle in one's head. Three people calling into question different aspects of their teaching has lead us into what feels like a swamp of change, where nothing seems certain and everything seems worthy of scrutiny.

> I hadn't ever defined myself as a more traditional teacher before I started working with Suzanne. I always thought I was a good teacher because my students always seemed to get the knowledge that I expected them to get. And I still feel that I was never a totally traditional teacher because there were always things that I think I did a little differently. But I was still basically more traditional than she is and I'm still not at where she is. But I see myself shifting and I see that every area that I shift that way, that for some reason, the children get more excited about learning. And they seem happier with their own products. I think they have more confidence. (Interview, March 1991)

Exploring how to teach in new ways has taken other forms of courage. For both Miller and Yerkes, having critical observers enter their rooms and watch them teach has been difficult to grow accustomed to. Miller explained: "It's scary because you don't know what the other person is thinking when they are watching." She went on:

> But having someone in the room is one thing that I have become used to. It's threatening, yes. But it's not. You have to deal with those feelings within yourself and say what you want to say. But you're learning right in there with the kids and so you put that all aside. (Memo, November 1991)

Writing this report has drawn on yet other forms of courage, for it has required that we confront each other (recall our conversation about student evaluations). It is also very scary for Miller and Yerkes to state for the record that the way they used to teach seems less than adequate to them now. And working in a still very traditional setting they run a risk by exposing themselves to administrators, teachers, and parents as "teachers-as-learners" rather than "teachers-as-experts."[24] Many people expect teachers to know what to do and they would find it troubling to read our account, for here we three aver that we are less than clear about how best to teach. We take a chance that some parent will read this report and complain about our incompetence; we risk the possibility that another

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[24]Miller and Yerkes have over and again noted the significance of the support that they receive from their principal, Dr. Wheeler-Thomas. As Yerkes has written,

> In order to effectively change teaching practices, you need an administrator who encourages new ideas and is willing to withhold her judgment. For instance, many principals expect each day to be divided into neat compartments where they can see each subject is given the proper amount of time. New ideas about teaching do not have each content area in neat packages; rather, ideas flow across all areas and each contributes concepts to the whole. Administrators must allow flexibility and trust each teacher. Teachers must also trust that administration will back them up even when they ail, for any attempt to genuinely learn something new requires some floundering along the way. (Memo, February, 1992)

Although we do not take up the issue of administrators as support in this report, we note here that there is much about the school context that also supports or inhibits the kind of learning and teaching we are exploring.

teacher in the school will read this and complain that we are not covering the necessary for children to be prepared for the next grade level.

These may seem small acts of bravery to the outsider, but any one who has worked in a school knows the pressure to conform, to not make waves, to follow tradition. Moreover, as women we have been raised to try and please, to provide stability, to follow not lead. Although it feels scary to her, Miller offers the following reflection:[25]

> I've changed. I've changed a great deal, especially in my self confidence. I'm beginning to feel more sure of myself as a person. I am beginning to make decisions that I know are right, even though these decisions may not always be agreed upon by those around me. I'm beginning to tread unfamiliar water and--although it's scary--it's exciting as well! I'm beginning to try to accomplish goals I never thought were within my reach.
>
> I never viewed myself as a leader, yet through this collaboration, I have gained a courage that I never discovered I had before. I have the courage to express my ideas. (This courage seems to be easier for me at my computer than by oral expression, but at least I have discovered this wonderful computer.) I never thought before that I would have the nerve to speak publicly to my peers about teaching, but I have. Though I have a long way to go to be good at this, I now have the courage to try. This courage is there because of a trust built up through this collaboration--that it's okay to try, because if you fail, there is support to help you get back up and try again. But on the other hand, too, this support is there to cheer you in your successes. I am a different person because of this. (Letter, February 1992)

*Courage as part of adventurous teaching.* We treasure this courage born from our trust and we are committed to finding ways to help students find a similar courage in themselves. Children need to be able to accept themselves and each other in all their diversity and difference. The learning we asking of students requires that we build trustworthy environments, but we also recognize that it requires a deep-down-inside courage. This is not something that we can guarantee will happen if only we create the right atmosphere. Miller describes how her explorations with adventurous teaching requires courage of students:

> This is not a "comfort zone" that I am building in my classroom, for me or for the students. It's challenging for them to be questioned--a questioning I have come to value

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[25]The following quote comes from a personal communication between Miller and Wilson, one that begins with a caveat:

> Suzanne, this is not an easy subject for me to write about. I've started to write about it many times, but I keep starting over. None of the stories seemed right. Somehow, what I've experienced in the classroom with the students is less sensitive for me to talk about. What I've experienced personally is not so easy.

> because I want to know what they know and how they are thinking--about why they think a certain way. This has been especially true in mathematics. My students were used to "explaining" why a character acted a certain way in a reading lesson, but explaining why you crossed off the 5 in
>
> $$\begin{array}{r} 54 \\ -\ 19 \\ \hline 35 \end{array}$$
>
> was difficult for even the brightest student. It even made one of my brightest students cry and get sick before math was to begin.
>
> And my anxiety level was up there, too. I was used to giving students formulas and if they could follow the plan and get the right answer, they were an excellent student. End of my teaching. (Memo, February 1992)

Almost every day now, we witness a courage in some student that stuns us. And it comes in many packages. Aliesha, who has been quiet for months, might raise her hand and ask a question of Juan. Deborah, who has always been a very successful student and finds it very difficult to be wrong, doesn't cry when Demetrius challenges her solution to a geography problem. Sarah, a quiet thinker who prefers her notebook to class discussions, writes us a message about whether or not her alternative solution to the one proposed in class might also work. Because we each have different ways of being brave, our collective view of our students allows us to recognize the myriad ways their courage emerges in the tasks they engage in. And in our work, we continue to wrestle with ways to at once create a trusting environment that provides the outside support for risk-taking while we also struggle to find ways to help each student look inward and begin to draw on courage that they've had all along and may--as Miller reflects--never have known was there.

*Communication*

A fourth theme in our collaboration has involved learning to communicate. Coming from different worlds, we have different experiences with communication. Wilson, as a researcher, is used to talking to large groups of people at professional meetings, as well as writing regularly for journals and university work. Miller and Yerkes, as classroom teachers, have done little public speaking and writing. On the other hand, they are in constant contact with parents, administrators, other teachers. Wilson, as a university person, was used to university discourse--talk full of argument and debate, disagreement and challenge. In many ways, a world dominated with what are sometimes considered male patterns of interaction. Miller and Yerkes were used to their elementary school discourse--which

was polite and respectful, very female--nurturing, supportive. Challenge and disagreement in their world has--more often than not--been considered something to avoid, bury. Learning to work together--for us, at least--has meant learning to take the best from both of these worlds and combine them into a way of talking and communicating that doesn't replicate either but allows us to communicate openly and honestly with care and commitment.[26]

Initially, we thought it would be important to communicate on a regular basis: Yerkes and Wilson had been frustrated by the lack of time to talk during their first year of coexistence, and so in the second year we decided to meet regularly. We thought it might also be important to have a system by which we could send each other messages. We established a dialogue journal for this purpose. But as we worked together, it became clear that communication in our collaboration was about much more than the physical arrangements: having a meeting time and place, having a journal. Instead, communication was about sharing a vocabulary, developing a manner of talking, and developing new habits. We explore each of these in turn as we examine the ways in which communication has played a role in our learning to teach.

*Communication as part of adventurous learning.* The folklore of school-university experiences contains many stories of teachers complaining about university people's "twenty-five cent words," jabs at the jargon of research and its unhelpfulness to the down-and-dirty world of real classrooms. It is true that university faculty and school faculty enter conversations with different vocabularies: Wilson is an educational psychologist, and much of her language has developed through her associations with researchers and scholars in that field. But talk of schemata and cognitive maps, mental models and situated learning, seem like Greek to Miller and Yerkes who work and live in a real school where talk is of effective schools and basals, crack babies, and the MEAP. Part of learning to communicate, for us, has entailed developing a shared vocabulary. And our respect for one another and the different roles we play in our collaboration has made it possible for us to bring our diverse vocabularies together.

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[26]It has been difficult for us to craft a way of interacting that melds these worlds, for we want to be able to challenge one another but not confront; nurture but not shelter. We feel we are a long way from creating a way of talking that allows us to work within these two worlds in a manner that has integrity and grace.

But developing a set of words to share was only the beginning of learning to talk to one another. Wilson came from a world of scholarship in which every thing she wrote and did was to be supported with a well developed and articulated rationale. And she had learned habits of discourse that enabled her to argue with opponents who readily challenged the claims she made about research or teaching. The academic world she lived in was much like one long oral defense in which people enthusiastically inquired, argued, debated, discussed, challenged one another's ideas. The air at Michigan State was full of such arguments, and Wilson was accustomed to actively participating in them.

Miller and Yerkes, on the other hand, had been working in the isolated world of their individual classrooms. Conversations among teachers stayed at the level of schedules and assignments, not the substance of their work. As Miller explained,

> Working together has been a really good thing for me. I've been more thoughtful and vocal with other people. I've always been an introvert with my teaching. I've always had a good feeling about my teaching, about my class, no matter what. But it'd been nice to *talk* with others. It's changed me, the risks I've taken have made me grow. What risks have I taken? I've become more vocal. I've never been vocal about the things I've done. I've never been vocal about my failures. I've never talked to other teachers about how we were teaching. . . . Sometimes we've talked about what we were going to teach, about schedules. Very little was said about methods of teaching students except the tried-and-true. The teacher standing in the front of the class giving knowledge and students sitting at their desks receiving knowledge and accessing that knowledge with paper and pencil tests. (Letter, June 1991)

Asked how it felt to become more vocal and to explain more about her thinking, Miller replied, "Scary! Awful! It's the hardest thing in the world for me to do. It's not easy to learn to explain yourself and to argue for what you believe" (Interview, March 1991).

Learning to talk about teaching has been at once exciting and scary, for it has meant articulating things long left tacit. And it has meant learning to challenge, to question, to debate—discourse characteristics that were not part of the school in which Miller and Yerkes work. But it began to dawn on us how important it was to be willing to argue one summer when the whole school had a professional development school meeting. During that meeting, another university person was arguing about her plans for the following year and leaving little conversational space for teachers to raise questions and to challenge her. Moreover, the teachers had no practice with challenging

someone's proposal and remained silent. Wilson, coming from the university, was familiar with such debate and engaged the faculty member in what became a rather heated argument about collaboration while Miller and Yerkes looked on.

After the discussion was over, we had lunch together and Miller and Yerkes shared with Wilson their discomfort during the discussion. "I thought you were all getting mad at each other," Miller explained. "I was very uncomfortable with the conflict," Yerkes added. After a few moments, Miller observed, "Yet, if we want children to argue with one another about their ideas and challenge each other--in polite and respectful ways--we have to be willing to learn to do that among ourselves" (July, 1990).

It took us a long time to learn to voice concerns and disagreements. Nearly two years into our collaboration, Miller wrote Wilson a letter questioning her curricular choices:

> Dear Suzanne,
>
> I don't believe I'm sitting at my computer at 3:30 a.m., but I had a thought about--of all things--teaching latitude and longitude. I'm thinking about Liz, a girl who is very thoughtful about this whole idea of up and down, back and forth lines to find places in the world. She seems to really want to understand this notion, but too many ideas are cropping up at once and it confuses her. Can the class be trying to ask too many questions to begin with about latitude and longitude? Can we just introduce only one degree and talk about just that line--be it a line of latitude or longitude and ask the class to tall all they can about that one degree, and stick to that one degree, understanding it totally? I'm thinking that it would help the class to focus on just one concept. (Letter, April 1991)

The letter stimulated a long series of letters and conversations among the three of us in which we discussed the role of confusion in learning. For example, Wilson wrote a letter to both Miller and Yerkes in which she explained:

> First, I'm not sure what the best way to learn things is. Schools have always assumed that there is either something linear (first we learn this, then we learn this) or that there are building blocks (you have to learn these basics before you can learn this more complex stuff), and curriculum has presented information to kids in linear and block-like ways. But when I think about my own learning, I think of it as much more messy, circular, back-and-forth. For example, when I think and learn now, I go back and forth between practical things and abstract things, between basic ideas and the bigger pictures that they fit in. It is actually helpful for me sometimes to look at an idea as it is embedded in a complex web of relationships--even when I'm not completely clear on the individual idea--because looking at it inside those relationships helps me sharpen my definition and understanding of it. [I'm not sure that any of this makes any sense] So, one of the reasons I haven't chosen to present one idea at a time has something to do with my sense that maybe learning--real learning--is not clean and simple, that it does involve messing around with a couple of ideas at once, that it does mean bouncing one

> concept off of another in an attempt to look at both their relationships and their individuality. (Letter, May 1991)

In response to this, Miller reflected in a conversation among the three of us:

> After I read what you write yesterday about confusion--and the more you talked about it in that letter, during the class, the more it hit home to me that really, one person's confusion leads to another person's discovery and that leads to another confusion. And eventually they came up with the idea of the up and down and I saw where you were trying to get them and where it eventually led them. And it was their discovery. So I'm feeling better about confusion.

This exchange was only the beginning of a longer conversation we continue to have about our assumptions about learning--how kids learn, when they learn, why they learn. We differ about many things--what we know, what we believe--and learning to communicate has been in large part learning to respect those differences without avoiding them, learning to discuss them openly and honestly without one person domineering or another remaining silent. In searching for the best way to talk to one another, we have worked hard to combine what we consider good about our different worlds--the willingness to challenge from the academic world with the concern for care and tenderness from the elementary school world--into a way of interacting that allows us to grow, but grow because we feel we can talk honestly and openly in comfortable ways.

Learning to communicate, for us, however, has meant more than just developing a way to communicate among ourselves. As we develop our collaborative relationship, our roles and responsibilities have merged somewhat. Wilson has become a member of the faculty of the elementary school, learning to work with other teachers and the administrator, as well as parents and the community. Meanwhile, Miller and Yerkes have been drawn into her world--invited to speak about their work as schoolteachers in a professional development school, as collaborators with university faculty. And because our lives continue apace, there is not enough time in the week for talking about everything that we want to say about our teaching and learning.

As our roles change, and the amount of material we want to talk about ever increases, we've had to develop new habits and skills of communication. Initially, Wilson had proposed the idea of a joint journal--something in which we could talk to one another and a means for leaving some



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documentation of our learning and work. But the journal failed to become a consistent part of our work. Miller explains:

> When we started the journal with Suzanne, it was just one more thing to be done that I probably haven't done for about three months. It wasn't convenient for me. There are so many different things you need to do as a teacher but no room. They pull you in a lot of different directions and the journal writing is just another pull. Is it as important as talking to parents or putting together a letter? You have to decide. (Interview, March 1991)

Our use of the journal has been sporadic and we've found the most benefit from our weekly conversations. As Miller has described them, "Our Wednesday afternoon meetings are a kind of writing." But as Wilson's travel and university schedule sometimes press on her ability to make all those meetings, we have also experienced some frustration in being able to communicate. This frustration drove Miller to writing one letter at 3:30 in the morning, which she ended by saying,

> Suzanne, I probably wouldn't be here at my computer sharing this with you if you could be with us on Wednesday afternoons. I miss our discussions. And I get very frustrated that I can't talk to you after class. We must set up a time to talk! (May 1991)

As a consequence of this frustration, we decided to try letter writing as a form of communication, a form that felt comfortable to both Miller and Wilson. Yerkes agreed with this decision, only later sharing with us her own reservations:

> I have to say that when you guys said we were going to write these letters, I freaked out. I just don't like to put things down in black and white. I have trouble saying what I'm saying. I felt it was going to take too much thinking to put down what I was thinking. (Conversation, June 1991)

Yet eventually, Yerkes too adapted to writing letters--albeit less frequently and shorter than Wilson's and Miller's, one of which she ended with the following: "Now, Suzanne, I hope you're excited that you got me to think tonight and even to risk putting down my thoughts on paper. See, you can teach an old dog new tricks. A fellow traveler--Carol Y."

Recently, we have also begun to experiment with technology, using electronic mail and other communication systems as ways to reduce the distance between our separate places of work. But every time we add another task to our work, the work expands in size and we are ever sensitive to balancing our needs to attend to our teaching, to our students, to our own learning, to each other, to our community, and to our families.

*Communication as part of adventurous teaching.* It is not surprising that we have recently found ourselves exploring ways in which the lessons we've learned about communication have implications for our students. We believe that they too need ways to keep track of their thinking and growth--and we have experimented sporadically with the idea of portfolios. Wilson has had students keep journals of their daily work; Miller and Yerkes have encouraged students to write more often. In all of our teaching, helping students learn to communicate--in written and oral forms--has become central, for we now understand how important this has been to our own individual and collective development. Learning to document and give voice to your mind's work is an essential piece of becoming an adventurous learner (and teacher). We are only beginning to think about how to integrate concerns for communication into the experiences that students have in our classrooms, but we are excited about the possibilities of using alternative assessments as well as technology (electronic mail, for example) as means for facilitating communication among students and teachers in our rooms and in our school.

*Conclusion*

This has been a difficult report to craft, for several reasons. For one, the collaboration we describe here is a living, breathing, ever-changing phenomenon, and it feels awkward to describe something that changes even as we try to hold it still long enough to describe it. Writing this report has reminded us that in the very act of writing about this relationship we have once again changed it.

But there is another reason why the report has been difficult, for the story here feels more rosy than the one we lived. It is true that we have experienced great success in our collaboration, and an effort born out of professional interest and responsibility has led to a deep, enduring friendship. But there has been nothing easy, simple about the process, and we have not felt particularly wise about the ways in which we went about it. It's been messy, confused, much like an inordinate amount of our teaching these days.

Cohen was right to suggest that change in teaching is "glacial." In our collaboration--and in our teaching--we feel only that we've taken the "fumbling first steps down an unfamiliar path." And we are no where near understanding what it takes to teach adventurously, for as Miller and Yerkes are quick to say, "We're still traditional teachers."

Wilson disagrees, for there seems nothing traditional about their enthusiasm and devotion to learning and change--a devotion that has continued even in the face of hard times: confrontations with other teachers in the school, questions from parents, disagreements among ourselves, battles with other university personnel. But it is also true that if an impartial outsider strode into one of our classrooms one day there might be very little that appeared innovative, adventurous, radical. Our experiences have taught us much about what we now call the "order of magnitude" question in learning. The changes Miller and Yerkes have experienced in their teaching and thinking seem enormous to them, yet those changes are as much in their minds and hearts as they are in their practice. Miller and Yerkes can see how their interactions and talk with students has changed in subtle and less subtle ways. But an outsider might see little that seemed new.

Yet perhaps this is the way that permanent, important change starts. Our learning is in our roots, in the very ways that we see and understand and think about our responsibilities as teachers and our relationships with students. We don't, however, feel like seedlings, fragile flowers easily uprooted with a single sweep of the hand. We feel more like those weeds one battles on spring days whose roots run deep and long, weeds that keep returning no matter how many times they are uprooted. The changes we have made won't go away. As Miller and Yerkes have both said, "The problem is, you can't go back."

There are many things we still don't know about teaching, but one lesson seems clear: As teachers trying to invent a practice, we have gained a great deal of insight into what it might mean to ask the same of students. The greatest source of insight into the nature of adventurous teaching--for us--has been our own experiences trying to enact such a vision in our classrooms. It is scary and unnerving to try to change your teaching, your curriculum, your assessment, your role and responsibilities, your students' assumptions and habits of mind (as well as those of their parents). It must be equally frightening for students to define and identify their own problems in mathematics, or history, or biology. It is frightening to try to do that in front of other people--as teachers working collaboratively or as students talking openly.

And contextual factors can make a difference but in ways none of us fathomed before we started this work. Time is critical but not so much for the bathroom break it provides; it is the time to watch over time someone else work on ideas that has been a greatest resource for us. And trust has been critical but not the trust that comes from professional respect. Rather, it's a trust that opens you up as a learner to see, to experience, to experiment. Learning to communicate has reinforced something that we already knew to be true: that in communicating your ideas to others, you develop them as well. Courage seems the strangest thing to discuss, for no one of us feels especially brave, although we recognize courage in our students. But the changes that are required in teaching are enormous, and the problems so critical that radical change is necessary. So maybe our change has come from fear of what might happen to students if school and university faculty *don't* join forces and facilitate necessary changes, not from some courage. However, we prefer to believe that we are--like many teachers and most students--hopeless Romantics, who believe anything is possible, even classrooms full of adventure.

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